NATURAL RESOURCES CONSERVATION SERVICE
CONSERVATION PRACTICE STANDARD

RESIDUE MANAGEMENT, MULCH TILL

(Acre)
Code 329B

DEFINITION

Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting.

PURPOSES

This practice may be applied as part of a conservation system to support one or more of the following:

* Reduce sheet and rill erosion.

* Reduce wind erosion.

* Maintain or improve soil organic matter content and tilth.

* Conserve soil moisture.

* Provide food and escape cover for wildlife.

CONDITIONS WHERE PRACTICE APPLIES

This practice applies to all cropland and other land where crops are grown.

This practice includes tillage methods commonly referred to as mulch tillage, or chiseling and disking. It applies to mulching idle or fallow land, tillage of annually planted crops, and tillage for planting perennial crops.

CRITERIA

General Criteria Applicable To All Purposes Named Above

Loose residue to be retained on the field shall be uniformly distributed on the soil surface.

Residue shall not be burned.

Combines shall be equipped with spreaders capable of redistributing residue over at least 80 percent of the working width of the header.

Tillage implements shall be equipped to operate through plant residues without clogging, and to maintain residue on or near the soil surface by undercutting or mixing.

Planters, drills, or air seeders shall be equipped to plant in residue distributed on the soil surface or mixed in the tillage layer.

The number, sequence, and timing of tillage and planting operations, and the selection of ground-engaging implements, shall be managed to achieve the planned amount, distribution, and orientation of residue after planting or at other essential time periods to meet the planned purpose. Acceptable alternative tillage sequences shall be initially determined by a residue budget using locally applicable data on residue production by crops and residue reduction by tillage machines. Further adjustments shall be made as needed during the tillage sequence based on field measurements of remaining residue.

Additional Criteria To Reduce Sheet And Rill Erosion

The amount of residue needed to reduce erosion within the soil loss tolerance (T) or any other planned soil loss objective meeting Quality Criteria in Section III, shall be determined using Revised Universal Soil Loss Equation (RUSLE) in the Field Office Computing System (FOCS) or Florida Agronomy Field Handbook (FAFH).

Partial removal of residue by means such as baling or grazing shall be limited to retain the amount of residue needed.

Calculations of residue amounts shall account for the effects of other practices in the conservation management system.

Tillage operations shall be limited to methods that leave residue on the surface and maintain the planned cover conditions.

Additional Criteria To Reduce Wind Erosion

The amount and orientation of residue needed to reduce erosion within the soil loss tolerance (T), crop tolerance (cT) and/or air quality shall be determined using wind erosion prediction technology such as Wind Erosion Equation (WEQ) in FOCS and FAFH.

Partial removal of residue by means such as baling or grazing shall be limited to retain the amount of residue needed.

Calculations of residue amounts shall account for the effects of other practices in the conservation management system.

Additional Criteria To Maintain Or Improve Soil Organic Matter Content

The amount of residue needed to achieve the desired soil condition, shall be determined using the current approved soil conditioning index procedure in the FAFH.

Partial removal of residue by means such as baling or grazing shall be limited to retain the amount needed.

Calculations of residue amounts shall account for the effects of other practices in the conservation management system.

Additional Criteria To Conserve Soil Moisture

A minimum quantity of 50 percent residue cover shall be maintained throughout the year. Residue shall be evenly distributed and maintained on the soil surface.

Partial removal of residue by means such as baling or grazing shall be limited to retain the minimum 50 percent residue cover.

Additional Criteria To Provide Food And Escape Cover For Wildlife

Residue height, amount, and time period shall be determined using the Habitat Evaluation Procedure in National Biology Manual.

Residues shall not be removed unless it is determined by the Habitat Evaluation Procedure that removal would not adversely affect habitat values. Stubble shall be maintained standing over winter. Tillage shall be delayed until spring in order to maintain waste grain on the soil surface during winter.

CONSIDERATIONS

Excess removal of plant residue by such means as baling, grazing or cutting silage often produces negative impacts on resources. These activities should not be performed without full evaluation of impacts on soil, water, animal, plants, and air.

Mulch till may be practiced continuously throughout the cropping sequence, or may be managed as part of a residue management system which includes other tillage methods such as no till. Selection of acceptable tillage methods for specific site conditions may be aided by using RUSLE.

Production of adequate amounts of crop residue necessary for the proper functioning of this practice can be enhanced by selection of high residue producing crops and crop varieties in the rotation, use of cover crops, and adjustment of plant populations and row spacings.

Where improvement of soil tilth is a concern, use of undercutting tools will enhance accumulation of organic material in the surface layer.

The value of residues for wildlife habitat can be enhanced by leaving rows of unharvested crop standing at intervals across the field.

PLANS AND SPECIFICATIONS

Specifications for establishment and operation of this practice shall be prepared for each field or treatment unit according to the Criteria, Considerations, and Operation and Maintenance described in this standard. Specifications shall be recorded using approved specification sheets, job sheets, narrative statements in the conservation plan, or other acceptable documentation. Example procedures and records are found in the FAFH.

OPERATION AND MAINTENANCE

No operation and maintenance requirements have been identified for this practice.

REFERENCES

- Field Office Computing System
- Wind Erosion Equation
- Revised Universal Soil Loss Equation
- National Biology Manual
- Florida Agronomy Field Handbook